1.0 INTRODUCTION AND METHODOLOGY

1.1 INTRODUCTION

Panther Environmental Solutions Limited (PES Ltd.) has been commissioned by the applicant, Banagher Chilling Limited, to prepare an Environmental Impact Assessment Report (EIAR), for the proposed upgrade and extension of an existing abattoir facility within the townlands of Meenwaun and Boheradurrow at Banagher, Co. Offaly. The proposed upgrade and extension of the existing facility would facilitate a maximum cattle slaughter rate of 140 per day. The following is the wording of the proposed development for which planning permission is being sought:

"We Banagher Chilling Limited intend to apply for permission for development at Boheradurrow and Meenwaun, Banagher, Co. Offaly R42HX24 the development will consist of a single storey extension to existing abattoir of 1061 square meters to include processing rooms, staff changing rooms, offices, increase roof height by 2 meters, extend existing lairage and elevation alterations. In addition the construction of a food processing factory of 4925 square meters with a part first floor of 2299 square meters to include processing rooms, cold store, loading bay, chill rooms, plant rooms, staff changing rooms, staff canteen and administration offices. External works consisting of staff car parking, service yards, new public road entrance, widening of existing public road, effluent treatment compound, water storage tank, gas storage tanks, truck wash bay, integrated constructed wetlands, security hut of 23 square meters, electrical room of 168 square meters, water treatment building of 72 square meters, effluent treatment control house of 30 square meters, all associated siteworks and landscaping works on a site of 19.60 hectares. This application is accompanied by an Environmental Impact Assessment Report (EIAR) and a Natura Impact Statement.

The planning application, EIAR and Natura Impact Statement may be inspected, or purchased at a fee not exceeding the reasonable cost of making a copy, at the offices of the Planning Authority during its public opening hours. A submission or observation in relation to the application may be made in writing to the planning authority on payment of the prescribed fee (€20) within the period of 5 weeks beginning on the date of receipt by the authority of the application."

The existing abattoir facility is located in the townland of Meenwaun, while the proposed extension and associated development would be located within the townlands of Boheradurrow and Meenwaun, Co. Offaly. The development site is located approximately 2.4km south-east and 8km north-west of Banagher and Birr towns respectively. The site is located in a rural, farming area predominantly comprised of pastureland, hedgerows and peatland. The site is accessed via the L3010, a local road linking to the R438 regional road. The R438 connects to the N65 primary road some 21.5km to the south-west and the N62 primary road some 7km to the north-east of the site.

A full description of the existing and proposed development is provided in Section 2 of this EIAR document.

This EIAR is to be submitted to Offaly County Council in support of an application for planning permission for the proposed development, as described above, under the Planning and Development Regulations 2001 (S.1.No 600 of 2001).

1.2 ENVIRONMENTAL IMPACT ASSESSMENT & PLANNING LEGISLATION

This EIAR has been prepared in accordance with the requirements of the European Communities (Environmental Impact Assessment) Regulation, 1989 to 2001, the Planning and Development Act 2000 and the Planning and Development Regulations 2001, as amended. This legislation requires the assessment of the effects of certain public and private projects on the environment.

At a maximum slaughter rate of 140 cattle per day, the proposed development would fall below the threshold prescribed in Schedule 5, Part 2, as follows:

7. Food Industry:

> *(f) Installations for the slaughter of animals, where the daily capacity would exceed 1,500 units and where units have the following equivalents:-*
> *1 head of cattle = 5 units.*

However, the proposed development would involve the construction of a Waste Water Treatment Plant (WWTP) with an estimated population equivalent (p.e.) of 15,667 at the development site. This would exceed the threshold population of 10,000 as defined under Class 11, Part 2 of Schedule 5 of the Planning and Development Regulations, 2001, as amended:

> *(c) Waste water treatment plants with a capacity greater than 10,000 population equivalent as defined in Article 2, point (6), of Directive 91/271/EEC not included in Part 1 of this Schedule.*

This EIAR is drafted with particular regard to Article 94 and Schedule 6 in the 2018 planning regulations, and is submitted to provide information that may be helpful to the planning authority in making its decision on this application for planning permission.

The EIA Directive, 2014/52/EU, amending the EIA Directive 2011/92/EU, was transposed into Irish law by the European Union (Planning and Development) (Environmental Impact Assessment) Regulations 2018 (S.I. No. 296 of 2018). Circular letters issued by the Department of Housing, Planning, Community and Local Government on the 15th of May 2017 (Ref. PL1/2017) and 27th August 2018 (Ref. PL05/2018) have also been consulted in preparation of this report, advising planning authorities and An Bord Pleanála of the procedures and information necessary to comply with the EIA Directive required under the new regulations:

"The new Regulations transpose the requirements of Directive 2014/52/EU, amending previous Directive 2011/52/EU, on the assessment of the effects of certain public and private projects on the environment (the EIA Directive) into planning law with effect from 1 September 2018."

The following documents and guidelines have been consulted as part of the preparation of this report:

- *Draft Guidelines on the information to be contained in Environmental Impact Assessment Reports* (EPA, 2017);

- *Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment* (Department of Housing, Planning and Local Government, 2018);
- *Development Management Guidelines* (Department of the Environment, Heritage and Local Government, 2007);
- *Guidelines on the information to be contained in Environmental Impact Statements* (EPA, 2002);
- *Advice Notes on Current Practice (in the Preparation of Environmental Impact Statements* (EPA, 2003);
- *Environmental Impact Assessment (EIA) Guidance for Consent Authorities Regarding Sub-Threshold Development* (Department of the Environment, Heritage and Local Government, 2003).

The guidelines state that in preparing an EIAR, the Developer will carry out an analysis of the likely effects of the project (positive or negative) on the environment. The Environmental Impact Assessment procedure commences at the project design stage when the scope of the study is determined. Studies are then carried out to investigate in detail, any potential environmental impacts. Where significant adverse impacts are identified, measures are recommended to mitigate or avoid the impact of the proposed development.

This Environmental Impact Assessment Report examines the potential significant impacts of the proposed development, comprising of an upgrade and extension to an existing abattoir facility and wastewater treatment infrastructure, to facilitate a maximum slaughter rate of 140 cattle per day at Banagher, Co. Offaly.

The extent of the proposed scheme is described in detail in Section 2 – Description of Development. The potential environmental impacts of the proposed scheme are addressed in Sections 4 – 17 of this volume of the report under the headings Human Environment, Natural Environment, Material Assets, Architecture, Archaeology and Cultural Heritage and Interactions and Inter-relationships.

1.3 EIA PROCESS OVERVIEW

Environmental Impact Assessment (EIA) is the process by which the anticipated effects on the environment due to a project are assessed or measured. The Environmental Impact Assessment Report (EIAR) summarises the environmental information collected during the impact assessment of the proposed development.

The steps of the EIA process can be described as follows:

(i) Screening;

(ii) Scoping;

(iii) Preparation of the EIAR:
- Consideration of Alternatives
- Project Description

- Description of Receiving Environment
- Identification and Assessment of Impacts
- Monitoring and Mitigation Proposals

(iv) Completion of EIAR:
- Scrutiny and Consent
- Enforcement and Monitoring

1.3.1 SCREENING

In order to determine if an EIA is required for the proposed development, it is necessary to determine whether the project is listed in one of the Annexes of Directive 2011/92/EU, as amended by Directive 2014/52/EU. These annexes have been transposed into Irish Law, with the prescribed classes of development requiring an EIAR outlined in Schedule 5 of the Planning and Development Regulations, 2001 (S.I. No. 600 of 2001), as amended.

Schedule 5, Part 1, of the above mentioned regulations, prescribes the mandatory thresholds in respect to Annex I projects. Annex II of the EIA Directive, transposed by Schedule 5, Part 2, of the Planning and Development Regulations, provides E.U. Member States discretion in determining the need for an EIA on a case-by-case basis for certain classes of projects, having regard to the overriding consideration that projects likely to have significant effects on the environment should be subject to EIA.

The proposed project is not listed in Schedule 5, Part 1, therefore, an EIA is not mandatory. The relevant class of development for the proposed project from Schedule 5, Part 2, is as follows:

11. Other projects:

(c) Waste water treatment plants with a capacity greater than 10,000 population equivalent as defined in Article 2, point (6), of Directive 91/271/EEC not included in Part 1 of this Schedule.

As the proposed development would include the construction of a WWTP with an estimated population equivalent (p.e.) of 15,667, an EIA is required.

1.3.2 SCOPING

Scoping is an essential part of the preparation of an EIAR as it ensures that all potential and important significant impacts on the receiving environment are taken into account at the earliest possible time. Scoping provides relevant information on the most important potential impacts of the project, which will have to be addressed in the EIAR. With regard to EPA criteria for scoping, the environmental areas that may be impacted by the proposed scheme were identified and are as follows:

Human Beings

During scoping, particular regard was given to the potential impact of the proposed development and operations on human beings. In particular, potential impacts which may

occur due to noise and dust during the construction phase, and noise, odour, visual impact and traffic during the operational phase were considered.

Natural Environment

The closest protected European sites to the proposed development are the All Saints Bog and Esker Special Area of Conservation (SAC) (Site Code: 000566) and the All Saints Bog Special Protection Area (SPA) (Site Code: 004103). There are a number of European sites located within 15km of the proposed development, 13 SACs and 5 SPAs, which include the callows of the River Shannon area and a number of fens and bogs. Eight Natural Heritage Areas (NHAs) are located within 15km of the development, which are mainly designated for their bog habitat.

The proposed development site is located on an aquifer categorised as a "Locally Important Aquifer – Bedrock which is moderately productive only in local zones". Groundwater vulnerability across the site is mapped as "Moderate" with a localised zone of "Low" vulnerability mapped in the north-west of the site. Within the wider region of the proposed development site, there are several karst features mapped.

The potential impacts on land, waters and biodiversity must be assessed with care to ensure that all impacts are clearly identified and where possible removed, reduced or minimised to a satisfactory level.

Material Assets

This involves assessing the impact of the development on land take, the availability of resources such as soils, utilities and natural resources and waste management in the area. Given the location of the proposed development site in an agricultural area, the development's potential impact upon agriculture must also be assessed.

Architecture, Archaeology & Culture Heritage

A number of monuments are present within the wider vicinity of the site. These include an enclosure, located approximately 0.5km to the north-east, and a cluster of toghers, with the nearest togher located approximately 1.1km to the north-east. Furthermore, two townland boundaries are located within the site, the boundary between Boheradurrow and Clongawny, and the boundary between Boheradurrow and Meenwaun.

1.4 INFORMATION TO BE CONTAINED IN AN EIS / EIAR

Schedule 6 of the Planning and Development Regulations, 2001, specifies the information to be contained within an EIS / EIAR, including:

1. (a) A description of the proposed development, comprising information on the site, design and size of the proposed development.

   (b) A description of the measures envisaged in order to avoid, reduce and, if possible, remedy significant adverse effects.

   (c) The data required to identify and assess the main effects which the proposed development is likely to have on the environment.

   (d) An outline of the main alternatives studied by the developer and an indication of the main reasons for his or her choice, taking into account the effects on the environment.

2. Further information, by way of explanation of the information referred to in paragraph 1, on the following matters:

   (a) (i) A description of the physical characteristics of the whole proposed development and the land-use requirements during the construction and operation phases.

   (ii) A description of the main characteristics of the production processes, for instance, nature and quantity of the materials used.

   (iii) An estimate, by type and quantity, of expected residues and emissions (including water, air, and soil pollution, noise, vibration, light, heat and radiation) resulting from the operation of the proposed development:

   (b) A description of the aspects of the environment likely to be significantly affected by the proposed development, including in particular:
   - Human beings, fauna and flora,
   - Soil, water, air, climate factors and the landscape
   - Material assets, including the architectural and archaeological heritage,
   - The cultural heritage,
   - The inter-relationship between the above factors

   (c) A description of the likely significant effects (including direct, indirect, secondary, cumulative, short, medium and long-term, permanent and temporary, positive and negative) of the proposed development on the environment resulting from:
   - The existence of the proposed road development
   - The use of natural resources
   - The emission of pollutants, the creation of nuisance and the elimination of waste and
   - A description of the forecasting methods used to assess the effects on the environment:

   (d) An indication of any difficulties (technical deficiencies or lack of know-how) encountered by the developer in compiling the required information.

1.5 IDENTIFICATION OF LIKELY SIGNIFICANT IMPACTS

Schedule 6 of the Planning and Development Regulations requires that an EIS describes likely, direct and indirect significant impacts of a proposed scheme. The EPA's draft "*Guidelines on the information to be contained in Environmental Impact Assessment Report, 2017*" defines an impact as the "change resulting from the implementation of project" and goes on to elaborate on impacts in terms of:

- Quality (positive, neutral or negative);
- Significance (imperceptible, not significant, slight, moderate, significant, very significant or profound);
- Extent and context;
- Probability of effects (likely, unlikely);
- Duration (momentary, brief, temporary, short-term, medium-term, long-term, permanent, reversible);
- Type (indirect, cumulative, Do-Nothing, worst-case, indeterminable, irreversible, residual, synergistic).

The following factors have been considered for this EIAR when determining the significance of the impacts, both positive and negative, of the proposed development on the various aspects of the receiving environment:

- The quality and sensitivity of the existing/baseline receiving environment.
- The relative importance of the environment in terms of national, regional, or local importance.
- The degree to which the quality of the environment is enhanced or impaired.
- The scale of change in terms of land are, number of people impacted, number and population of species affected including the scale of change resulting from all types of impacts.
- The consequence of that impact/change occurring.
- The certainty/risk of the impact/change occurring.
- Whether the impact is temporary or permanent.
- The degree of mitigation that can be achieved.

The magnitude of the impacts outlined in the sections which follow, take into account the guidelines given by the EPA and those scales used in other EIS / EIAR documents for significant developments in this country. A broad outline of the scale of impacts is given in Table 1.1.

Where mitigation in the form of design measures have been suggested throughout the evolution of the EIAR, these have been incorporated into the scheme design as far as is possible from an engineering perspective.

Table 1.1: General Criteria used to quantify the Potential Impacts of the Proposed Scheme

SIGNIFICANCE LEVEL	DEFINITION OF IMPACT
Profound	Significant Impact An impact, which obliterates sensitive characterisation
Major	An impact, which by its character, magnitude, duration or intensity alters a sensitive aspect of the environment.
Moderate	An impact that alters the character of the environment in a manner that is consistent with existing and emerging trends
Slight	An impact, which causes noticeable changes in the character of the environment without affecting its sensitivities
Not significant	Neutral or imperceptible impact An impact which does not change the quality of the environment is capable of being measured but without noticeable consequences and causes changes in the character of the environment which are not significant or profound

1.5.1 SCENARIOS INVESTIGATED

A number of different scenarios should be examined when determining likely significant impacts. The "do nothing" scenario should compare the quality of the existing receiving environment with that of the likely environment should the proposed scheme not be built. The "do something" scenario should compare the quality of the existing receiving environment with that of the likely environment should the proposed scheme be built.

1.6 REPORT STRUCTURE

The main EIAR document is comprised of the following:

Non-Technical Summary:

A summary of the findings of the EIAR, in non-technical language.

Part I: Proposed Development:

Part I describes the existing and proposed development at the site, previous planning applicants and consents and a summary of consultations with the relevant statutory bodies and competent authorities. Part I includes the following sections:

Section 2: Description of the Development
Section 3: Alternatives

Part II: Environmental Impacts:

Part II describes the likely significant environmental impacts arising from the proposed development. Where possible, design measures have been included to reduce or eliminate potential impacts. Where this has not been possible, mitigation measures have been suggested to reduce or eliminate the identified impacts of the proposed development.

Part II has been divided into five main sections, as per the table below.

MAIN SECTION	SUB-SECTION
Section A – Human Environment	4. Population and Human Health
	5. Air Quality, Climate and Odour
	6. Noise and Vibration
	7. Landscape and Visual
	8. Traffic and Transport
Section B – The Natural Environment	9. Biodiversity – Terrestrial Environment
	10. Water Quality and Aquatic Biodiversity
	11. Land – Soils, Geology, Hydrology and Hydrogeology
Section C – Archaeological, Architectural and Cultural Heritage	12. Archaeological, Architectural and Cultural Heritage
Section D – Material Assets	13. Material Assets – Agriculture
	14. Material Assets – Utilities
	15. Material Assets – Natural and Other Resources
	16. Material Assets – Waste Management
Section E – Interactions and Inter-relationships	17. Interactions and Inter-relationships

1.7 COMPETENT EXPERTISE

Directive 2014/52/EU states that the preparation of EIAR documents should be undertaken by "competent experts", ensuring that the information provided is of high quality.

Panther Environmental Solutions Ltd. (PES Ltd.) is a leading Environmental Consulting Firm based in Carlow, Ireland. PES Ltd was established in 2005 by Environmental Consultant Mike Fraher who has over two decades of experience working in the Environmental Consultancy Industry, both in Ireland and in the UK. The PES Ltd. team are experienced in preparing EIS / EIAR documents, having completed a number of these reports for a range of industries including the food and drink and intensive agriculture sectors.

PES Ltd. has been requested by the applicant to prepare an EIAR in support of a planning permission application for the proposed development comprising of an extension to an existing abattoir facility at Banagher, Co. Offaly. This EIAR has been prepared by experienced environmental consultants with PES Ltd. Mr. Mike Fraher has over 25 years' of consultancy experience and has a B.Sc Degree in Environmental Sciences from the University of Glamorgan, Cardiff in Wales and a Diploma in Food Sciences from Cork Institute of Technology.

Mr. Martin O'Looney has over six years' consultancy experience and has a B.Sc Degree in Environmental Science and Technology from Sligo Institute of Technology. Ms. Lorraine Wyse has over four years' consultancy experience and has a B.Sc Degree in Environmental Science and Health from Dublin City University and a Diploma in Field Ecology from University College Cork. Mr. Nial Ryan has over two years' consultancy experience and has a B.Sc in Applied Physics from Dublin City University and an M.Sc in Regulatory Affairs from Institute of Technology Carlow.

Additional expertise was obtained for certain sections of the EIAR, as outlined in Table 1.2 below.

Table 1.2: Contributors to the EIAR

REF	EIAR TOPIC	COMPANY	PERSONNEL
1	Introduction	PES Ltd.	Ms. Lorraine Wyse
2	Description of Development	PES Ltd.	Mr. Martin O'Looney Mr. Nial Ryan Ms. Lorraine Wyse
3	Alternatives	PES Ltd.	Mr. Martin O'Looney Ms. Lorraine Wyse
4	Population and Human Health	PES Ltd.	Mr. Nial Ryan Ms. Lorraine Wyse
5	Air Quality, Climate & Odour	Katestone Environmental Pty Ltd. / PES Ltd.	Mr. Michael Fogarty (Odour, Air Quality & GHG Assessment) Mr. Martin O'Looney Ms. Lorraine Wyse (summarising assessment within section)
6	Noise & Vibration	Enfonic Ltd. / PES Ltd.	Mr. Gary Duffy Mr. David Courtney (Noise & Vibration Impact Assessment) Mr. Martin O'Looney (summarising assessment within section)
7	Landscaping and Visual	Macro Works Ltd.	Mr. Richard Barker Mr. Nik Hennessy Mr. Cian Doughan
8	Traffic and Transport	NRB Consulting Engineers Ltd.	Mr. Eoin Reynolds
9	Biodiversity – Terrestrial Environment	PES Ltd.	Ms. Lorraine Wyse
10	Water Quality and Aquatic Biodiversity	PES Ltd.	Mr. Martin O'Looney
11	Land – Soils, Geology and Hydrology	IE Consulting Ltd.	Mr. Jer Keohane Mr. Kevin Murphy
12	Archaeological, Architectural and Cultural Heritage	Shanarc Archaeology Ltd.	Mr. Seán Shanahan Ms. Edel Barry Ms. Marion Sutton
13	Material Assets – Agriculture	PES Ltd.	Mr. Nial Ryan Ms. Lorraine Wyse
14	Material Assets – Utilities	PES Ltd.	Mr. Nial Ryan
15	Material Assets – Natural and Other Resources	PES Ltd.	Mr. Nial Ryan
16	Material Assets – Waste Management	PES Ltd.	Mr. Nial Ryan Ms. Lorraine Wyse
17	Interactions and Inter-relationships	PES Ltd.	Mr. Martin O'Looney Mr. Nial Ryan Ms. Lorraine Wyse

Air Quality, Climate and Odour

This section has been prepared by Katestone Environmental Pty Ltd., an air quality and meteorlogy consultancy established in Australia in 1989, with an Irish base in operation since 2017.

This section has been managed by Mr. Micheal Fogarty. Mr. Fogarty completed a Bachelor of Engineering Degree (Biosystems) at University College Dublin in 2003. He subsequently spent five years researching various odour measurement, abatement and dispersion modelling subjects, being awarded a Masters of Engineering Science in 2006 and a PhD in 2009. Micheal joined Katestone as a Senior Consultant in 2013, bringing six years' of consulting experience in air quality impact assessment. Micheal specialises in odour impact assessment and has worked on many projects involving estimation of emissions from intensive poultry production, waste water treatment, pumping stations, landfills and asphalt production. He has designed and implemented odour monitoring campaigns involving olfactometry, field odour assessment and odour nuisance surveys. He has also utilised a range of numerical meteorological and dispersion modelling in odour assessments including Aermod Ausplume, Calmet/Calpuff, TAPM, CAL3QHCR (traffic modelling) and ISC.

Additional Katestone personnel have contributed to this section, including; Mr. Simon Welchman, an Environmental Engineer and Director of Katestone, with more than 19 years' experience; Ms. Natalie Shaw, a Principal Air Quality Consultant with over 13 years' experience; Ms. Lisa Smith, a Senior Consultant; Mr. Andrew Vernon, a Senior Consultant and Dr. Michael Burchill, a Senior Consultant.

Noise and Vibration

This section has been prepared by Mr. Gary Duffy and Mr. David Courtney of Enfonic Ltd. Enfonic Ltd. are specialists in the sound and vibration sector, with a background as the leading supplier of instrumentation, software and services for over 25 years.

Mr. Gary Duffy is a founder member of the Irish Branch of the Institute of Acoustics (IOA) and is Enfonic's founder and managing director. After ten years working at B&K, Gary established Enfonic. Gary has been advisor, educator and consultant; he co-wrote the EPA's original guidance note on noise and represented the IOA on the technical advisory committee of the Department of the Environment's revision of Part E (Sound Insulation) of the Building Regulations. He was the first student of the IOA Diploma in Acoustic and Noise in Ireland and went on to teach the diploma in 2010.

Mr. David Courtney studied Mechatronic Engineering in Dublin City University, and completed the IOA Certificate in Environmental Noise Assessment. As Enfonic's acoustic engineer, he undertakes all types of noise and vibration surveys in relation to wind turbines planning and compliance, IPPC & IE compliance, BS4142 and BZ5228 assessments, traffic noise and construction noise/vibration.

Landscaping and Visual

This section has been prepared by Macro Works Ltd., specialists in Landscape and Visual Impact Assessments. The company was established in 1999, providing a full suite of visual assessment, analysis, GIS mapping and simulation tools for all aspects of energy, civil

engineering infrastructure and commercial developments. This section has been prepared by Mr. Richard Barker, Mr. Nik Hennessy and Mr. Cian Doughan.

Mr. Richard Barker is a Principal Landscape Architect with Marco Works, who formerly worked as a Town Planner in New Zealand, London and Dublin prior to moving to the field of Landscape Architecture. He has spent the last 15 years working as a Landscape Architect in Ireland, with considerable experience in the fields of both Landscape and Visual Impact Assessment (LVIA) and landscape design, covering all stages from project feasibility through to construction. Richard is a Corporate Member of the Irish Landscape Institute, and has presented several conference papers relating to sustainable landscape design and LVIA. His qualifications include a MLA from Lincoln University, a PG Diploma in Forestry from Canterbury University and a BA in Environmental Science from Massey University.

Mr. Nik Hennessy is the Managing Director of Macro Works, with over 20 years' experience of visualisations, from small residential to large industrial projects. Nik specialises in the areas of visibility analysis and photo-real simulation for LVIA, and has developed a reputation as a pioneer in addressing the more complex issues of analysis and presentation of verifiable visuals for LVIA. Nik recently commissioned and oversaw the development of Ireland's only Glint and Glare modelling software for solar applications with NUI Maynooth. His qualifications include a Bachelor of Agricultural Science, Forestry with UCD and a MAgr(for) by research with UCD in the development of forest inventory and management software.

Mr. Cian Doughan is an honours graduate of Landscape Architecture from UCD, and has worked as a Landscape Architect with Macro Works for four years, working in a variety of roles involving a combination of LVIA, landscape design and 3D modelling. Prior to joining Macro Works, Cian worked for a leading landscape design office (Hollander Design) in New York for a year. Cian's main field of interest in landscape architecture is that of landscape planning, and in particular, LVIA. Cian was recently involved in preparing the Draft Landscape Design Guidelines for Irish Water Infrastructure projects.

Traffic and Transport

This section has been prepared by NRB Consulting Engineers Ltd., specialists in the area of traffic, transport and road design. NRB Consulting Engineers have developed designs for roads, signalised junctions, priorty junctions and roundabouts throughout Ireland, from feasibility through to construction, in addition to undertaking detailed traffic studies.

This section has been preapred by Mr. Eoin Reynolds, a Chartered Engineer with over 29 years' experience in a range of civil engineering projects. Eoin specialises in the field of Traffic and Transportation and Roads Design, assessing the infrastructure needs of development, and is an expert in the use of Traffic Engineering Modelling Software (TRICS, ARCADY, PICADY, LINSIG, TRANSYT and Micro-Simulation Techniques). Eoin was previously Director of the Irish Office of Waterman Boreham Transport Planning and prior to that was Manager of the Belfast office of JMP Consultants Ltd (owners and managers of the TRICS Database). He is a noted Professional/Expert Witness in the field of Traffic/Roads & Road Safety.

Land – Soils, Geology and Hydrology

This section has been prepared by IE Consulting Ltd, a water, environmental and civil engineering consultancy established in 2001. IE Consulting provide specialist services in hydrogeology and environmental geology.

The soils, geology and hydrology section has been reviewed by Mr. Jer Keohane, Technical Director with IE Consulting, who has over 35 years' experience and whose qualifications include B.Sc and M.Sc and whose professional affiliations include CGeol, FCIWEM, and MIEI.

The soils, geology and water sections have been prepared by Mr. Kevin Murphy, under the supervision and guidance of Jer Keohane. Kevin has worked as a Graduate Project Hydrogeologist with IE Consulting since 2018. Kevin has a B.Sc Degree in Geology, an M.Sc degree in Hydrogeology & Water Management and up to 1 years' experience in the geoscience sector.

Archaeological, Architectural and Cultural Heritage

The Archaeological, Architectural and Cultural Heritage section has been prepared by Mr. Seán Shanahan, Ms. Edel Barry and Ms. Marion Sutton of Shanarc Archaeology Ltd. Shanarc Archaeology Ltd. was established in 2014 by Mr. Shanahan, specialising in archaeological and geophysical services.

Mr. Seán Shanahan has over 20 years' experience working in commercial archaeology and is a licence eligible director. Mr. Shanahan has an honours degree in Archaeology and Philosophy from NUI Galway and a Master's Degree in Geographical Information Systems and Remote Sensing from NUI Maynooth.

Ms. Edel Barry has several years' experience as both a recorder on built heritage surveys and an editor, as well as a site assistant and supervisor in the field. Ms. Barry has an honours degree in Archaeology and English from NUI Galway, a Masters in Philosophy from UCC and a Higher Diploma in ArcGIS from UCC.

Ms. Marion Sutton has several years' experience preparing environmental impact assessment reports in Ireland, and has worked overseas in public land management, preparing Heritage Assessments and supervising works on archaeology and cultural heritage sites. Ms. Sutton has an honours degree in Archaeology and Geography from NUI Cork and a Master's degree in Environmental Resource Management from NUI Dublin.

1.8 LINKS BETWEEN EIA AND APPROPRIATE ASSESSMENT

The EU Habitats Directive (92/43/EEC) on the conservation of natural habitats and of wild fauna and flora, as amended by council directive 97/62/EC, 2006/105/EC, and Regulation EC1882/2003 of September 2003, as transposed into Irish law by the European Communities (Birds and Natural Habitats) Regulations, 2011 (S.I. 477/11), provides the framework for legal protection for habitats and species of European importance.

Article 6(3) and 6(4) of the Habitats Directive lays down the procedure to be followed when planning new developments that might affect a European site (Natura 2000 site). Article 6(3) of the Habitats Directive states;

"*Any plan or project not directly connected with, or necessary to the management of the site, but likely to have a significant effect thereon, either individually or in combination with other plans or projects, shall be subject to appropriate assessment of its implications for the site in view of the site's conservation objectives. In the light of the conclusions of the assessment of the implications for the site, and subject to the provisions of paragraph 4, the competent national authorities shall agree to the plan or project only after having ascertained that it will not adversely affect the integrity of the site concerned and, if appropriate, after having obtained the opinion of the general public.*"

Article 6(4) would come into force following a determination that a plan or project may adversely affect the integrity of a European site.

In accordance with these requirements, the proposed development has been assessed to determine whether any likely significant effects would arise due to the proposed development upon European sites. The resulting Natura Impact Statement forms part of this application (Report Ref. PES_NIS_19_9201).